

CLAIM AMENDMENTS

1. (Currently Amended) A semiconductor device comprising:
a semiconductor substrate;
a channel layer ~~formed~~ on the semiconductor substrate;
a Schottky layer ~~formed~~ on the channel layer;
a first layer having a narrower band gap than the Schottky layer, the first layer ~~inserted in~~ being disposed within the Schottky layer;
a second layer having a band discontinuity with the Schottky layer, the second layer ~~inserted in~~ being disposed within the Schottky layer, ~~and the second layer disposed on the~~
first layer;
a gate electrode disposed on the Schottky layer;
first and second n+ layer formed layers on the Schottky layer on both opposite sides
of the gate electrode, ~~the n+ layer having discontinuous parts positioned on the gate~~
~~electrode~~;
a source electrode ~~formed~~ on the first n+ layer; and
a drain electrode ~~formed~~ on the second n+ layer.

2. (Currently Amended) ~~A~~ The semiconductor device according to claim 1, wherein
the first layer has a lattice defect on boundary face defects at an interface between the first
layer and the Schottky layer.

3. (Currently Amended) A semiconductor device comprising:
a channel layer ~~formed~~ on a semiconductor substrate;
a Schottky layer ~~formed~~ on the channel layer;
a p-type-doped layer ~~inserted in~~ disposed within the Schottky layer;
an n-type-doped layer ~~inserted in the~~ disposed within the Schottky layer, ~~the n-type~~
~~doped layer disposed~~ on the p-type-doped layer;
a gate electrode disposed on the Schottky layer;
first and second n+ layer formed layers on the Schottky layer on both opposite sides
of the gate electrode, ~~the n+ layer having discontinuous parts positioned on the gate~~
~~electrode~~;
a source electrode ~~formed~~ on the first n+ layer; and
a drain electrode ~~formed~~ on the second n+ layer.

4. (Currently Amended) ~~A~~ The semiconductor device according to claim 1, further comprising a p⁺ contact layer connecting the source electrode with the Schottky layer, the p⁺ contact layer being disposed below ~~below~~ opposite the source electrode.

5. (Currently Amended) ~~A~~ The semiconductor device according to claim 1, further comprising a via-hole penetrating from the source electrode to the semiconductor substrate.

6. (Currently Amended) A semiconductor device comprising:
a channel layer ~~formed~~ on a semiconductor substrate;
a Schottky layer ~~formed~~ on the channel layer;
a gate electrode disposed on the Schottky layer;
a compound semiconductor layer containing phosphorus (~~P~~) and covering ~~the surface~~ of the Schottky layer;
first and second n⁺ layer formed layers on the compound semiconductor layer containing phosphorus (~~P~~), on both opposite sides of the gate electrode, ~~the n⁺ layer having discontinuous parts positioned on the gate electrode;~~
a source electrode ~~formed~~ on the first n⁺ layer; and
a drain electrode ~~formed~~ on the second n⁺ layer.

7. (Currently Amended) ~~A~~ The semiconductor device according to claim 6, further comprising:
a first pair of first and second compound semiconductor layers containing phosphorus (~~P~~) ~~which sandwich~~ sandwiching the first n⁺ layer; and
a second pair of first and second compound semiconductor layers containing phosphorus (~~P~~) ~~which sandwich~~ and sandwiching the second n⁺ layer.

8. (Currently Amended) ~~A~~ The semiconductor device according to claim 6, further comprising:
a first pair of ~~third first~~ first and ~~fourth second~~ second compound semiconductor layers containing phosphorus (~~P~~) sandwiched between the first n⁺ layer and the Schottky layer;
a first n⁻ layer sandwiched between the first pair of ~~third first~~ first and ~~fourth second~~ second compound semiconductor layers containing phosphorus (~~P~~);
a second pair of ~~third first~~ first and ~~fourth second~~ second compound semiconductor layers containing phosphorus (~~P~~) sandwiched between the second n⁺ layer and the Schottky layer;
and

a second n- layer sandwiched between the second pair of ~~third~~ first and ~~fourth~~ second compound semiconductor layers containing phosphorus (~~P~~).

9. (Currently Amended) ~~A~~ The semiconductor device according to claim 6, wherein the compound semiconductor layer containing phosphorus (~~P~~) is ~~made of~~ InGaP.

10. (Currently Amended) ~~A~~ The semiconductor device according to claim 1, further comprising first and second electron supply layers ~~which sandwich~~ sandwiching the channel layer.